The New Literacy: Technology in the Classroom

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Literacy is being re-defined by the presence of technology in our schools and our society. No longer does literacy mean only the ability to read with comprehension and write with clarity. Today's students are being asked to use technological advancements across the curriculum, from mathematics to language arts, from music to exercise science. Technology has been part of the educational system since the personal computer was introduced in the 1980s. More recently, with the advent of the Internet and advanced software, technology has become a part of the daily lives of the majority of Americans. We are shifting into a new age. Benjamin (1995) writes that schools are microcosms of the society that exists outside the schoolhouse. With this theory in mind, Goodman's (1995) observation sheds a great deal of light on what restructuralists identify as the three waves of school reform. According to Goodman, the 'first wave' of school reform was in response to this country's rural, farm-based society; the 'second wave' school system was established for the industrial age; and now a 'third wave' of school change is needed for the coming 'information/technology age'.

The definition of literacy has changed over the centuries based on human, cultural, and technological evolution. When education first started to spread to the masses in the 1800s, literacy meant being able to read and write. As behavioral learning styles began to emerge in the early part of the twentieth century, the theories of Skinner, Locke, Thorndike, and Watson began to surface. Teachers were trained to assume the learner's mind was neutral and passive. The focus of learning was to reinforce behaviors through systematic rewards and punishments (Kellough and Kellough, 2003). In the traditional classroom, the teacher's role was that of dispenser of knowledge. Strickland

(1993) argues that in the behavioral paradigm, an educated person is said to be one who knows what his or her culture has tacitly agreed are important facts to possess. Prior to the technological demands of the 1980s, most American schools employed a traditional approach to teaching. The typical American school lesson was teacher centered where the teacher lectured in the front of the room while the students sat in neat rows of desks, copiously taking notes. Students then memorized their notes in order to regurgitate facts on the exam. The major tools for communication were pencil and paper. The idea of a basic understanding of reading, writing, and arithmetic deemed an individual literate.

However, the standard of learning is shifting at a rampant rate. Technologies, coupled with the theories of cognitive-experimentalism, have begun to change how learning is happening in today's classroom. Constructivists such as Vygotsky, Dewey, and Bruner posit that learners are constantly interacting with the physical environment and that the focus of teaching should be facilitating the learner's experiences and construction of new perceptions that result in new knowledge (Kellough and Kellough, 2003). Technology is fostering this paradigm transformation. The methods of rote learning, drill and kill practices, and diagramming sentences are starting to take a back seat to approaches that incorporate skills such as the ability to find, evaluate, and use information from a variety of sources (O'Grady, 1999). Information literacy requires strong critical thinking skills and the ability to process data into knowledge through creative analyzing, synthesizing, and problem solving (Jukes, 2000).

Contemporary literacy is altering education in all subject areas. According to Nelson (1999), as technology continues to effect school curriculum, the emphasis must focus on depth of knowledge, not breathed of information. Literacy in contemporary

society means being active, critical, and creative users of both print and spoken language. It also includes having the capacity to analyze the visual language of film and television, commercial and political advertising, and the massive amount of information available on the World Wide Web. Literacy means being able to use an array of technologies to gather information and communicate with others.

Furthermore, in the past, literacy meant being able to read, write and communicate in an individual's native tongue. Mastering the language was the center of literacy. Today, being considered literate does not mean being able to master the language of technology, but instead being able to understand how to use the medium. Gilster (1997) argues that digital literacy does not mean individuals must memorizes complicated computer codes and programming languages, Instead, it means having the knowledge and capacity to read and decipher information that is different from the methods used to read books and newsprint. The digitally literate person has mastered the ability to scan massive amounts of information, make decisions about what is valid and valuable, and knows how to search for relevant material quickly.

The constructivist approach to teaching is an obvious launching pad to embracing contemporary literacy because constructivism values a student-centered classroom where the teacher acts as facilitator of knowledge and students take more ownership over their education (Roblyer et al., 1998). The theory allows digital literacy to become part of the school curriculum. Students must be leaders in their educational progress because children are adaptive and master technologies faster than their overseers (Gilster, 1997). Typically, students are walking into today's classroom digitally armed with an arsenal of technological trends and trick of the trade. It is the student who is often times training the

teacher in methods of incorporating technology into the curriculum. Inherently, the constructivist facilitator is adaptable to this new age student, giving the student ownership over the process of how learning will occur. The traditional, behaviorist will struggle with this type of student, demanding that the instructor is more knowledgeable than the student. When it comes to the knowledge base of the information to be learned, maybe the instructor is more knowledgeable, but when it comes to *how* new information will be sought and filtered, the new age student will be more swift and efficient via the use of technology.

Tell (1999) proposes that although we are using different types of communication mediums in the classroom we still expect students to read and write in a traditional way. The difference is that now students read and interpret not just words on a page, but also icons on a computer screen, symbols representing functions on a keyboard, images on TV, and navigation tools on the Internet. High school graduates need to be more than merely literate. They must be able to read challenging material, to perform sophisticated calculations, and to solve problems independently. Walker (1999) writes that past generations expected educated people to show what they knew by repeating what they had learned. Today, educated people are expected to use what they know creatively, to express themselves, to design, build, and innovate. Finally, technological advancements are enabling educators to train students beyond knowledge and application. The computer, Internet, and sophisticated software programs are acting as a support system elevating students' ability to analyze, synthesis, and evaluate new knowledge. The skills of literacy are changing because the amount of information available is changing. More

new information was created in the past 30 years than appeared in the previous 5,000 (Large, 1984).

Albert Einstein wrote that, "The world we have created is a product of our thinking. It cannot be changed without changing our thinking." Many teachers are concerned that students will focus too greatly on the ease that technology brings to research, mathematic computation, and writing. However, if we shift our pedagogical paradigms to new levels we will see that the change might bring about lessons that are more important. For example, teachers have argued that spell checkers will ruin student's spelling abilities. Walker (1999) contends that perhaps they will, but perhaps the immediate reinforcement of the correct spelling will make students even more skilled at spelling. Maybe the energy that is typically generated toward correct spelling can now be exerted toward creating stronger ideas and defending them vividly. Evolving as a skilled writer is more challenging and rewarded than becoming a great speller.

The institution of education must evolve as technology develops the current trends of our society. The question is who is responsible for teaching students about technology especially considering the fact that adolescents are capable of adjusting to the rampant innovations more assertively than adults? Is the classroom teacher responsible? Is it parents? Should it be a community effort? Maybe it is the student's own quest, or even technology itself.

It will take a cadre of people to enhance the education of students in this country. The students will have to be trained to take leadership roles in their educational journey. Parents will need to be involved; communities will need to support local efforts to create technology centers for students whose families cannot afford home computers or Internet

access. Technology can play an active role in the education of students with the creating of telecommunication teams of advisors. Teachers, school officials, parents, and students can collaborate via technology to advance student endeavors.

Sandholtz, Ringstaff, and Dwyer (1997) explain that, "the benefits of technology integration are best realized when learning is not just a process of transferring facts from one person to another, but when the teacher's goal is to empower students as thinkers and problems solvers". Universities must do their part as well. Changes must be made in the required curriculum for education majors. Universities must make an effort to train its teachers so that the teachers can train the students in the public school classroom.

Literacy is the ability to access, analyze, evaluate, and communicate messages in a variety of forms (O'Grady, 1999). Technology is changing the way we think about literacy and the characteristics we consider in literate people. Education will play a major role in the shift from the old to the new definitions of literacy and will battle the social and ethical implications associated with the influx of technology in the classroom. Most importantly, the role of the teacher will have to change from the traditional model of vessel of all knowledge, to that of facilitator. Students will need to be encouraged to create their own meaning through thoughtful research and justification. The entire community must become involved in this quest toward understanding the new digital literacy.

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